Telecommunications and Internet Protocol Harmonization
Over Networks (TIPHON) Release 4;
Interface Protocol Requirements Definition;
TIPHON Extended H.248/MEGACO
Package (EMP) Specification;
ICF Control over Reference Point
Important notice

Individual copies of the present document can be downloaded from:
http://www.etsi.org

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at
http://portal.etsi.org/tb/status/status.asp

If you find errors in the present document, send your comment to:
editor@etsi.fr

Copyright Notification

No part may be reproduced except as authorized by written permission. The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2002. All rights reserved.

DECT™, PLUGTESTS™ and UMTS™ are Trade Marks of ETSI registered for the benefit of its Members. TIPHON™ and the TIPHON logo are Trade Marks currently being registered by ETSI for the benefit of its Members. 3GPP™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.
Contents

Intellectual Property Rights ................................................................................................... 4
Foreword .............................................................................................................................. 4
Introduction ....................................................................................................................... 4

1 Scope ............................................................................................................................... 5
2 References ....................................................................................................................... 5
3 Definition ......................................................................................................................... 6

4 Middlebox Package ......................................................................................................... 6
  4.1 Properties .................................................................................................................... 6
  4.2 Events ........................................................................................................................ 7
  4.3 Signals ........................................................................................................................ 7
  4.4 Statistics ...................................................................................................................... 7
  4.5 Procedures .................................................................................................................. 8

5 Formal syntax .................................................................................................................. 8

Annex A (informative): Bibliography .................................................................................. 9

History ............................................................................................................................... 10
Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for ETSI members and non-members, and can be found in ETSI SR 000 314: "Intellectual Property Rights (IPRs): Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (http://webapp.etsi.org/IPR/home.asp).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This Technical Specification (TS) has been produced by ETSI Project Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON).

Introduction

The purpose of this H.248/MEGACO package is to extend the currently available standard packages to allow control of Quality of Service and Media Firewall functions using the H.248/MEGACO protocol. It complements the Release 4 H.248/MEGACO Technology Mapping for Reference Point N (see TS 101 885 [1]).
1 Scope

The present document is applicable to TIPHON reference point I3 and provides a H.248/MEGACO Package for use in implementing the relevant interface.

![Figure 1: Entities involved in control over the reference point](image)

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.


3 Definitions

For the purposes of the present document, the following term and definition applies:

**middlebox**: physical implementation of an InterConnect Function (ICF)

4 Middlebox Package

**Package ID**: EMP (0x????).

**Version**: 1.

**Extends**: None.

This package defines a property to enable the MGC to act as a MIDCOM Agent and control a "gateway" acting as a Middlebox.

4.1 Properties

1) Interface ID

- **Description**: a MB can have a number of logical interfaces, each of which is associated with an IP addressing space/range external to the MB. This property enables the controller to explicitly identify the logical interface that is applicable to the related ephemeral termination.

- **Property ID**: iface (0x0001).

- **Type**: integer.

- **Possible Values**: any.

- **Defined in**: termination state descriptor.

- **Characteristics**: read/write.

2) Token Rate

- **Description**: denotes the continually sustainable data rate (in Kbytes/second) against an ephemeral termination. In addition, the Middlebox requires a "bucket size" to be specified so that it can provide a Token Bucket in accordance with RFC 2216 [4]. It is assumed that the "bucket size" is specified external to this package (e.g. via management). Any packets that exceed the token bucket ((Token Rate x T) + (Bucket Size)) over a time period T shall be silently discarded by the Middlebox. However, the Middlebox shall report the number of discarded octets/packets - see Statistics. This parameter would typically be set against an external/untrusted ephemeral. Absence of this parameter means that no rate checking is performed against the ephemeral termination.

- **Property ID**: tokenrate (0x0002).

- **Type**: Integer.

- **Possible Values**: 0-65535.

- **Defined in**: termination state descriptor.

- **Characteristics**: read/write.
3) Pin-Hole Time To Live
   - **Description:** denotes the TTL of the pin-hole (in seconds). If absent, an infinite TTL shall be assumed.
   - **Property ID:** phttl (0x0003).
   - **Type:** 32bit Integer.
   - **Possible Values:** any.
   - **Defined in:** local control descriptor.
   - **Characteristics:** read/write.

   **NOTE:** It can be derived from SDP as well. SDP allows the use of send and receive only flows which provides the means to give a choose on the addresses on the middlebox.

4.2 Events

1) Pin-Hole Timer Expired
   - **Event ID:** phtoexp (0x000A).
   - **Event Description Parameters:** None.
   - **Observed Event Description Parameters:** None.

4.3 Signals

None.

4.4 Statistics

1) Packets Discarded
   - **Statistic ID:** pd (x0001).
   - **Description:** Denotes the number of packets (against the ephemeral termination) silently discarded by the Middlebox. The packets may have been discarded either due to failing a source address/port check or if the flow rate exceeds the pre-determined Bandwidth Context.
   - **Type:** UINT64.
   - **Possible Values:** Any.

2) Octets Discarded
   - **Statistic ID:** od (x0002).
   - **Description:** Denotes the number of octets silently discarded (against the ephemeral termination) by the Middlebox.
   - **Type:** UINT64.
   - **Possible Values:** Any.

   It should also be noted that it is assumed that statistics relating to transmitted packets and octets is obtained (inter alia) via the existing NETWORK and RTP Package statistics.
4.5 Procedures

The InterConnect Function (ICF) may be viewed as an IP-IP Packet-Packet GW. The ICF shall support a number of logical interfaces (typically 2) - each interface being associated with a given IP address range. The IP ranges may be any mixture of public and private addressing ranges. Domains with overlapping address ranges may be supported.

A flow is a bi-directional connection between two logical channels, normally RTP in one direction and RTCP in the other direction. To enable a flow through the ICF, the controller must request the creation of two ephemeral terminations, specifying the logical interface in each case. On receipt of such a request the ICF shall select IP addresses from the ranges appropriate to each logical interface and inform the controller accordingly. The token rate for a flow is set up against an ephemeral termination and represents the bandwidth available to the sum of all flows on that termination. Each flow is represented by an H.248 stream. As is customary for H.248, the source and destination addresses of a flow are held in the local descriptor and remote descriptor of the termination that acts as the source or sink for the flow.

On a per flow basis, filtering of packets may be enabled/disabled by appropriate wildcarding of the IP addresses in the local descriptor. When address translation is used, the ICF shall for a termination that sources the flow overwrite the source/sink address of IP packets with those assigned to the remote descriptor. When packets from a sanked flow do not match the source and sink addresses as specified in the local descriptor the packet shall be silently discarded.

A flow may be stopped by:

1) setting the remote descriptor to zero within a stream and setting reservegroup and reservevalue to "false";

2) changing the mode property of the localcontrol descriptor to "inactive".

5 Formal syntax

As in RFC 3015 [3], the package described in this draft may be encoded as ASN.1 or augmented Backus-Naur Form (BNF) (see RFC 2234 [2]).
Annex A (informative):
Bibliography

- Internet Draft draft-ietf-midcom-framework-07.txt: "Middlebox Communication Architecture and framework".
History

<table>
<thead>
<tr>
<th>Document history</th>
</tr>
</thead>
<tbody>
<tr>
<td>V4.1.1</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>